ESD Report for DA

22 Melwood Avenue, Forestville

Forestville RSL Club

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Contents

Revision History

Revision	Reference	Description	Author	Checked By	Date
2.0	028002	ESD DA Report	Payal Aggarwal	Luke Williams	9th May 2025

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1 Introduction

Aspire Sustainability Consulting has been engaged to prepare an Ecologically Sustainable Design (ESD) report for DA regarding the proposed development located at 22 Melwood Avenue, Forestville NSW 2087.

1.1. Sustainable Design Frameworks

The development shall be designed in line with the following sustainable design frameworks, ensuring key ESD design principles are implemented across all aspects of design:

- National Construction Code 2022 compliance (Section J);
- Sustainable Buildings SEPP 2023;
- Building Sustainability Index (BASIX); &
- Warringah DCP 2011.

1.1.1 NCC 2022 Section J Compliance

Provisions within Section J of the NCC relate to energy efficiency and the reduction of Greenhouse Gas Emissions for Class 2 to 9 developments. Aspects of design required to be addressed in Section J include the façade, building envelope, lighting, HVAC, energy metering, building sealing and ventilation. Non-residential portions of the development shall comply with NCC 2022 Section J, Volume 1 which will be documented through the completion of a J1V3 Performance Solution report.

1.1.2 Sustainable Buildings SEPP

The Sustainable Buildings SEPP is aligned with National Construction Code & NSW Net Zero Policy which will help in delivering buildings that are more energy efficient, produce less GHG emissions and inform future benchmarks. The development at 22 Melwood Avenue, Forestville is a residential development with RSL Club and is therefore required to:

- Address general sustainability requirements (SEPP C2); &
- Disclose embodied emissions for future benchmarks (SEPP C3).

It should be noted that the Sustainable Buildings SEPP is a framework that sets minimum performance requirements for projects in NSW, however local councils may enforce increased sustainability targets for residential and commercial developments.

1.1.3 Building Sustainability Index (BASIX)

BASIX is the primary framework applied to Class 2 portions of developments in addition to their associated common areas. Minimum performance requirements regarding the building fabric, appliances (energy and water efficiency) and central building systems have been achieved.

Table 1: SEPP Requirements

SEPP C.2 General Sustainability Requirements	Response
C.2.1 Minimise waste from associated demolition and construction, including choice and reuse of building materials.	Please see Sections 8 & 10.
C.2.2 Reduce in peak demand for electricity through the use of energy efficient technology.	Please see Section 6.
C.2.3 Generate and store renewable energy.	Please see Section 6.
C.2.4 Reduce reliance on artificial lighting and mechanical heating and cooling through passive design.	Please see Section 6.
C.2.5 Meter and monitor energy consumption.	Please see Section 6.
C.2.6 Minimise the consumption of potable water.	Please see Section 9.
SEPP C.3 Embodied Emissions	**Response**
C.3.1 The form will measure key materials in the substructure, superstructure and façade of the building via a bill of quantities prepared by a quantity surveyor, designer or engineer.	NABERS Embodied Emissions Disclosure to accompany DA.
SEPP C.4 Net Zero Provisions	**Response**
C.4.1 Net Zero Statement to include estimated scope 1 and 2 emissions up to 2050.	N/A- Not a large commercial development as defined by SEPP.
C.4.2 Where fossil-fuel dependent building systems are used, confirm provision of enough physical space, infrastructure, ventilation, and electrical capacity for the development to operate without fossil-fuel by 2035.	
C.4.3 Provide information about onsite renewables, passive design, and other infrastructure (such as chilled beams) that improve energy performance.	
C.4.4 Evidence of intent or procurement of offsets where applicable.	
C.4.5 Offset onsite fossil fuel use calculated over 10-year period.	
SEPP C.5 Energy Standards	**Response**
C.5.1 Identify preferred Section J energy reporting pathway and submit NABERS Energy Commitment Agreement with development application.	N/A- Not a large commercial development as defined by SEPP.
C.5.2 Submit Section J report and any independent review or performance-based solutions at construction certificate stage.	
C.5.3 Achieve minimum 5.5 Star NABERS rating within 24 months of occupation certificate.	
C.5.4 Offset performance gap between standard and operational performance.	
SEPP C.6 Water Standards	**Response**
C.6.1 Minimum 3 Star NABERS water rating achieved within 24 months of the Occupation Certificate is issued.	N/A- Not a large commercial development as defined by SEPP.
C.6.2 Submit progress report (in the form of annotated drawings or written statement) at Construction Certificate.	

1.1.4 Warringah DCP 2011 Controls & Objectives

The following table references sections within the report where compliance is demonstrated with applicable DCP requirements.

Table 2: Warringah DCP 2011 Controls & Objectives

D22 Conservation of Energy and Water	Response
1. The orientation, layout and landscaping of sites is to make the best use of natural ventilation, daylight and solar energy.	To be addressed by architect.
2. Site layout and structures are to allow for reasonable solar access for the purposes of water heating and electricity generation and maintain reasonable solar access to adjoining properties.	To be addressed by architect.
3. Buildings are to be designed to minimize energy and water consumption.	Please see Sections 6 & 9.
4. Landscape design is to assist in the conservation of energy and water.	Please see Section 11.
5. Reuse of stormwater for on-site irrigation and domestic use is to be encouraged, subject to consideration of public health risks.	Please see Section 9.
6. All development must comply with Council's Water Management Policy.	To be addressed by civil.

1.2. Aim of Report

The following sections outline design initiatives being considered for the sustainable design frameworks to reduce the environmental impact of the design, construction, and operation of the development, highlighting alignment with applicable targets and planning controls.

2 Project Description

The proposed development includes the development comprising of:

Stage 1: Construction of a new RSL club and seniors living apartments at the southern end of the site where the existing Bowling Greens are located. It includes three levels above ground with the RSL club at ground floor and the seniors living apartment occupying the upper two levels. There will also be a basement for parking and general storage that comprises three split levels; &

Stage 2: The demolition of the existing Club and associated carparking area in the northern part of the site, followed by the construction of 3 x 3 level seniors living apartment buildings over single level basement.

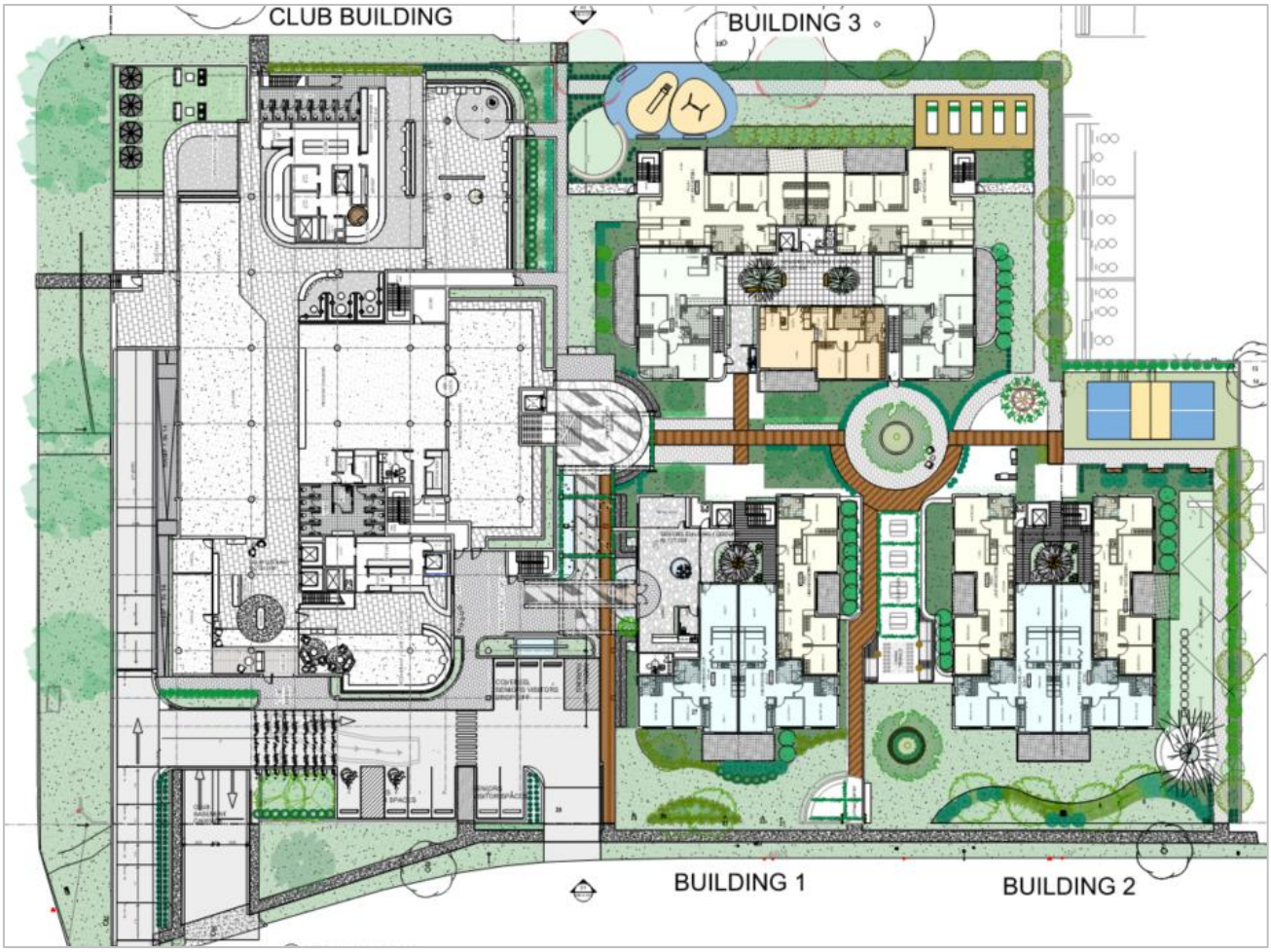


Figure 1: Site Layout

The following documents were used as the basis of this preliminary ESD advice note:

- Architectural Drawing: Masterplan Set, DA Resubmission, 05/05/25;
- Warringah DCP 2011;
- National Construction Code 2022 compliance (Section J); &
- Sustainable Buildings SEPP 2023.

The following Sections provide information relating to the sustainable design features currently incorporated in design.

3 NCC 2022 Section J (Non-Class 2 Spaces)

Recommendations are provided below relating to glazing, insulation and NCC Section J EV & Solar Provisions.

3.1 Glazing

An initial review shows that most glazed areas are well shaded and should allow double glazing window systems to be avoided in most spaces if desired.

3.2 Insulation

Requirements for insulation may vary between Class 2 units and remaining building classes, as Class 2 units are subject to BASIX regulations. The following guidance is provided:

Class 2:

Subject to BASIX Thermal Comfort Requirements.

Non-Class 2 Areas

- R2.0-R2.5 insulation batts (approximately 90mm) to external and internal walls between conditioned/non conditioned spaces;
    - Where lightweight walls are present in the thermal envelope, R0.2 thermal breaks are required to be installed between the outer construction layer (FC/Aluminium Cladding) and stud frame housing insulation;
- R1.00 insulation (approximately 25mm if rigid PIR insulation) between floors of conditioned spaces and unconditioned spaces below; &
- R3.30 insulation (approximately 60-70mm if rigid PIR insulation/140mm insulation batts) to ceilings/roofs, with reflective backing facing airspace/ceiling void.

Insulation requirements will be finalised following completion of Section J report.

3.3 New NCC 2022 Section J Provisions

Whilst thermal performance requirements (glazing and insulation) have not changed between NCC 2019 and 2022, there are some additional provisions relating to EV infrastructure & PV that will need to be considered:

Table 3: J9D4 Requirements (EV Infrastructure)

Building Class	Infrastructure Requirements	% of Car Parking Spaces	Future Charging Requirements
Class 2 (Residential)	Sized to support future installation of 7kW (32A) Type 2 chargers	100%	Capable of delivering a minimum 12kWh from 11pm to 7am daily
Class 5 (Office)	Sized to support future installation of 7kW (32A) Type 2 chargers	10%	Capable of delivering a minimum 12kWh from 9am to 5pm daily
Class 6 (Café, Dining)	Sized to support future installation of 7kW (32A) Type 2 chargers	10%	Capable of delivering a minimum 12kWh from 9am to 5pm daily
Class 9 (Bar, Entertainment Areas, Cinema)	Sized to support future installation of 7kW (32A) Type 2 chargers	20%	Capable of delivering a minimum 12kWh from 9am to 5pm daily

Discussion is therefore required to determine the carparking spaces associated with each building class to inform infrastructure requirements associated with dedicated EV distribution boards provided to support future installation of car parking spaces in accordance with Table 3.

Solar PV (J9D5)

J9D5 requires electrical infrastructure and free roof area for future installation of PV to 20% of the roof area or an equivalent generation capacity elsewhere on-site.

4 BASIX (Class 2 Units & Common Areas)

A BASIX certificate (1763355M_04) has been generated that contains water, energy, thermal performance and material requirements for the development to consider and implement in detailed design. Scores achieved are outlined below.

Table 4: BASIX Scores

	Target	Score
Water	40	41
Energy	67	68
Thermal Performance	Pass	Pass
Materials	n/a	n/a

5 Ecologically Sustainable Design

The following Sections contain additional sustainable design initiatives currently being explored by the design team in line with the ecologically sustainable design categories outlined below:

- Passive Design & Energy Efficiency
- Water
- Emissions
- Transport
- Construction
- Climate Change Adaptation
- Materials
- Land Use & Ecology
- Waste

During design development, feedback from the design team will drive discussions with the aim of finalising the approach regarding sustainable design for the 22 Melwood Avenue, Forestville 2087.

6 Passive Design & Energy Efficiency

The project will consider the following initiatives throughout design development:

- A light external colour scheme that reduces the sites contribution to the urban heat island effect, also lowering internal temperatures by minimising the heat being transferred through the building fabric;
- Shading incorporated on the northern, eastern and western facades; minimising peak HVAC loads whilst allowing winter daylight penetration (Figure 2);
- Suitably performing glazing for each facade, protecting from hot ambient air during summer whilst allowing heat to be kept inside during winter;
- Vegetation incorporated throughout site to provide shade and places of respite whilst helping to minimise the urban heat island effect (Figure 3); &
- Thermal mass utilised where possible, helping to smooth out daily temperature peaks and troughs.

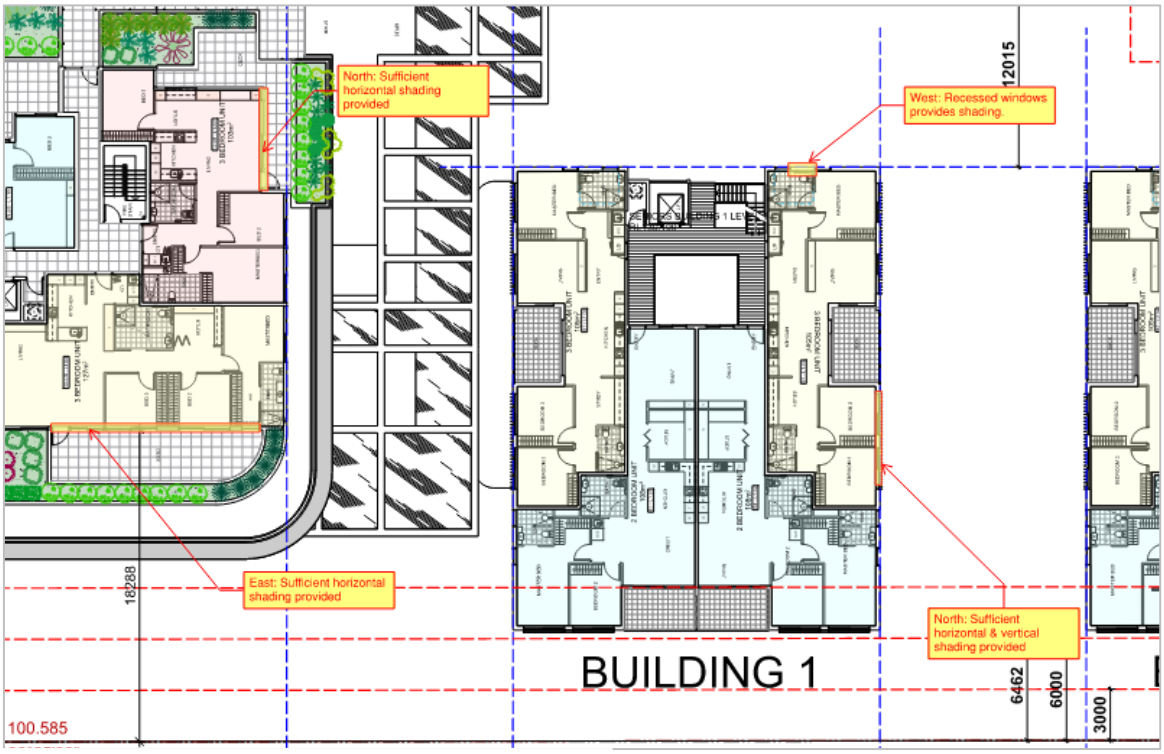


Figure 2: Shading

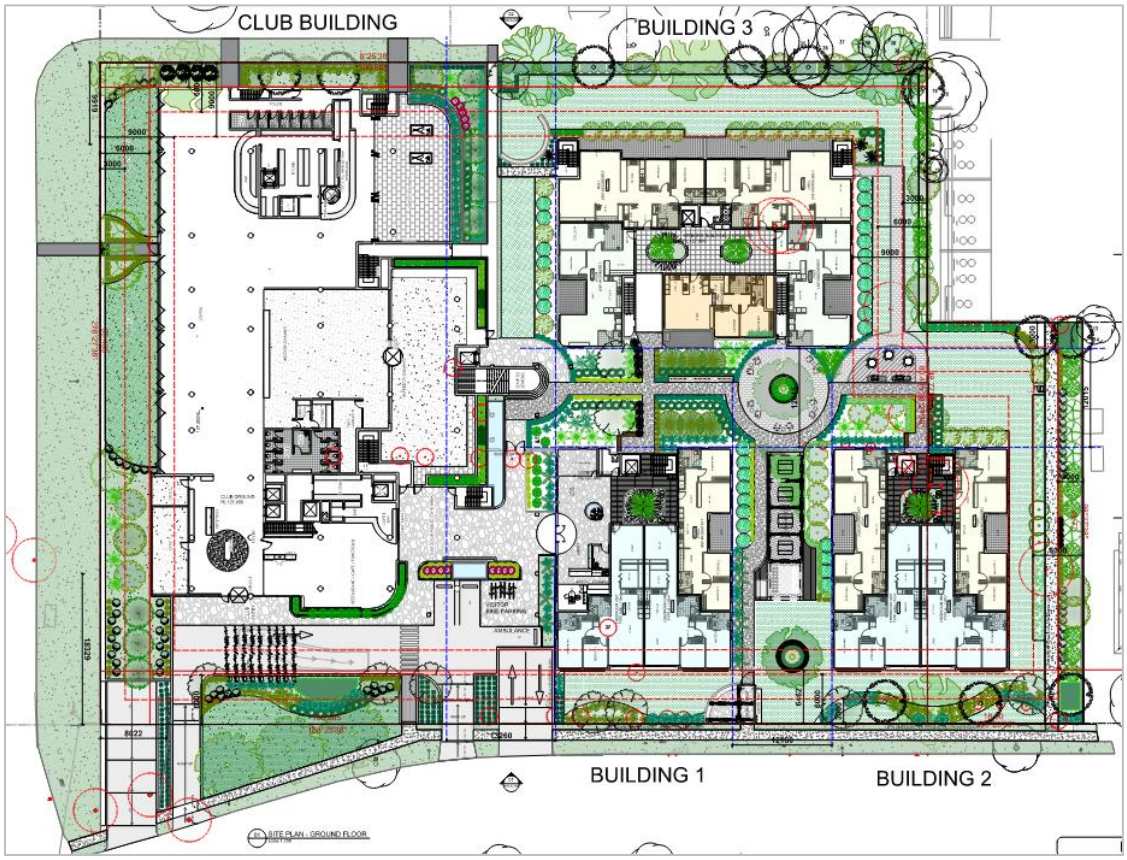


Figure 3: Vegetation around the site

Energy efficiency initiatives being explored in design are outlined below:

- Metering in line with minimum performance standards to track and monitor energy consumption;
- Efficient, air-cooled HVAC systems that eliminate water consumption associated with heat rejection;
- Centralised, energy efficient domestic hot water system;
- Exceeding minimum energy efficiency provisions within NCC 2022 Volume 1;
- 45kW Solar PV system installed to provide a large portion of the sites power, whilst reducing peak power demands; &
- Energy efficient LED lighting throughout with appropriate motion & daylight controls.

7 Transport

The development is located in Forestville, well connected to a variety of sustainable modes of transport such as bicycle tracks and bus stops. Additional items that will be investigated during detailed design include:

- Locker facilities for staff; &
- Provision of EV vehicles parking.

8 Materials

The environmental footprint of the development can be reduced through the procurement of sustainable products. This can include products produced with lower than typical energy consumption during manufacture, made with reused content, or not transported large distances to its point of use.

During the detailed design phase, the sustainable materials strategy for the development will explore the following items:

- Environmental Performance Declarations (EPD's) for major material elements;
- Recycled content in products where appropriate;
- FSC timber;
- Use of local materials;
- Use of low embodied energy materials; &
- Paints, adhesives & sealants specified to contain low VOC & formaldehyde, improving internal air quality.

Figure 4: Examples of third-party environmental product declarations that can be explored during design development.

9 Water

The development will reduce water consumption by considering the following water saving measures into design:

- Installing fixtures and fittings in line with best practice requirements outlined in Table 5;
- Ensuring native plant species are incorporated throughout, where possible;
- 5kL Rainwater tank to be used for landscape irrigation & car wash bay; &
- Air cooled HVAC systems, reducing water associated with heat rejection.

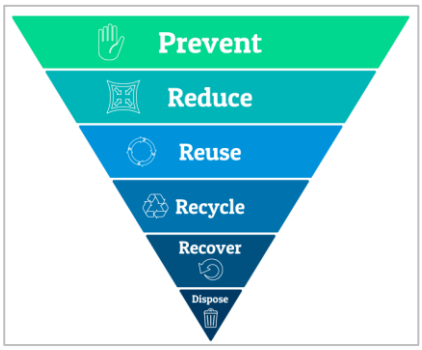
Table 5: Recommended Water Efficiency of Fixtures & Appliances

Fixture/Equipment Type	WELS Rating
Taps	3 stars
Toilet	3 stars
Showers	3 stars (> 7.5 but <= 9)
Clothes Washing Machines	3.5 Stars
Dishwashers	3.5 Stars

Figure 5: WELS Water Rating Label

10 Construction

Sustainable construction practices that will be considered for implementation throughout construction include:



- Contractor construction waste management plan to investigate >90% of construction waste by weight being diverted from landfill; &
- Responsible management systems such as an Environmental Management Plan & implementing an Environmental Management System in line with ISO 14001.

11 Land Use & Ecology

The development aims to reduce potential negative impacts resulting from urban development and enhance local ecology by considering the following design features:

- Plant beds & trees at multiple locations which allow for deep planting and significant canopy cover, providing shade, improving air quality as well as enhancing local levels of biodiversity;
- Utilising stormwater and WSUD features in line with Warringah DCP, decreasing the strain on central water infrastructure systems, and providing safe havens for local biodiversity; &
- Light colour schemes to external surfaces and areas of deep soil vegetation that reduce the urban heat island effect.

12 Emissions & Waste

ESD initiatives associated with emissions and waste to be considered include:

- Stormwater & WSUD features in line with planning controls, reducing the sites impact from stormwater runoff and pollution;
- Adopting air cooled HVAC systems, eliminating the risk associated with legionella disease when cooling towers are installed on site;
- Provision of facilities to enable separation of multiple waste streams including glass, plastic, cardboard and organic waste; &
- Minimisation of construction waste to landfill.

The potential to use air conditioning systems with refrigerants that have a low Global Warming Potential will also be explored, subject to no detrimental impacts on air conditioning system efficiency.

13 Climate Change Adaptation

To ensure the long-term durability of the site and its ability to adapt to a changing climate, the following measures will be considered:

- Light colour schemes that keep the external surfaces of the building cool, reduce impacts of the urban heat island effect & keep naturally ventilated spaces cool;
- Increasing capacity of mechanical and electrical distribution boards to accommodate an increase in building electrical loads associated with a warming climate;
- Ensuring the development is constructed in accordance with recognised standards regarding wind tolerance and impacts from hail; &
- Offering areas of respite during extreme weather events.

14 Conclusion

This report demonstrates the development is on track to achieving sustainability requirements contained within Warringah DCP Requirements.

Throughout design development, detailed investigations will be carried out to further refine the ESD strategy for the development, providing an exceptional example of sustainable design to the Forestville community and beyond.